

**Louisiana Department of Environmental Quality (LDEQ)  
Office of Environmental Services**

**STATEMENT OF BASIS**

**PCS Nitrogen Fertilizer LP  
PCS Nitrogen Fertilizer LP – Ammonia Group - Geismar Agricultural Nitrogen &  
Phosphate Plant  
Geismar, Ascension and Iberville Parish, Louisiana  
Agency Interest Number: 3732  
Activity Number: PER19960001  
Proposed Permit Number: 2241-V1**

**I. APPLICANT**

**Company:**

PCS Nitrogen Fertilizer, LP – Ammonia Group  
10886 Hwy 75  
Geismar, Louisiana 70734-0000

**Facility:**

Geismar Agricultural Nitrogen & Phosphate Plant  
Ammonia Group  
10886 Hwy 75 - (Hwy 30 & 3115)  
Geismar, Ascension and Iberville Parish, Louisiana  
Approximate UTM coordinates are 687.100 kilometers East and 3344.600 kilometers North, Zone 15

**II. FACILITY AND CURRENT PERMIT STATUS**

The ammonia group is divided into four operations: the Ammonia Plant, the Urea Plant, the Solutions Plant, and Product Storage and Loading.

The Ammonia Plant is a conventional Kellogg unit. Ammonia is produced by reacting nitrogen and hydrogen over a catalyst. The nitrogen and hydrogen are obtained from air, natural gas, and steam. Carbon Dioxide is a byproduct used as a raw material in the manufacture of urea at the Urea plant.

The Urea Plant reacts ammonia and carbon dioxide under pressure to form urea and carbamate. The latter decomposes to ammonia and carbon dioxide at reduced pressure. Free ammonia is collected and re-introduced into the process or transported to the Nitric Acid Plants 3 and 4 and to the Ammonium Nitrate Plants 1 and 2 as a raw material. Excess carbon dioxide is collected and vented to the atmosphere.

The Solutions Area uses products manufactured in other areas of the complex as raw materials to mix agricultural chemical solutions including URAN™.

**PCS Nitrogen Fertilizer LP**  
**PCS Nitrogen Fertilizer LP – Ammonia Group - Geismar Agricultural Nitrogen &**  
**Phosphate Plant**  
**Geismar, Ascension and Iberville Parish, Louisiana**  
**Agency Interest Number: 3732**

The Product Storage and Loading Area covers storage of ammonia group products and a variety of material handling activities, including dock activities. Emissions associated with unloading phosphate rock at the dock and conveying it to the Phosphoric Acid Plant are included in Permit No. 2276-V0.

PCS Nitrogen Fertilizer LP, Ammonia Group at the Geismar Agricultural Nitrogen & Phosphate Plant, an existing fertilizer facility began operation in 1967 as Allied Chemical Corporation. Permit 359 was issued on September 4, 1974 to allow the installation of a fuel oil standby system. Permit No. 731 was issued on May 20, 1977 to allow for the expansion of the Urea plant from 2,700 tons per day (tpd) to a 4,350 tpd plant. An exemption was issued October 5, 1983 to allow for the installation of Urea Separators, ID's 93 and 94. Permit No. 1940 was issued on December 22, 1984 to allow for an alternate fuel monitoring method. Arcadian Fertilizer, LP purchased the facility from Allied Chemical on June 4, 1984. The Ammonia Plant was issued a state consolidated permit on December 23, 1993 under Permit No. 2241 to include the Ammonia production, Urea production and the Ammonia Cogeneration Plant. The facility currently operates under Permit No. 2241 (M-1), issued September 26, 1994 which allowed for the combustion of purge gas in the Ammonia Reformer. PSD Permit PSD-LA-617 was issued on March 9, 1998 to account for increases in NO<sub>x</sub> and CO from the Ammonia Reformer. Arcadian Fertilizer, LP changed the company name to PCS Nitrogen Fertilizer LP, effective March 6, 1997. Small source permit 2545 was issued June 11, 1998 to allow for the construction of an Ammonia plant emergency flare. General Permit 2241-V0 was issued on July 30, 1999 to allow for the replacement of co-generation turbine.

PCS Nitrogen Fertilizer, LP, a subsidiary of Potash Corporation of Saskatchewan, Inc., is located on the Mississippi River in the Geismar area. About 450 acres of the 1,050-acre site has been developed. The remaining acreage is predominantly natural forest and contains some wetland.

PCS Nitrogen Fertilizer LP – Phosphoric Acid Plant - Geismar Agricultural Nitrogen & Phosphate Plant is a designated Part 70 source. Several Part 70 permits have been issued to the operating units within the complex. These include:

Permit No.	Unit or Source	Date Issued
2240-V2	Nitrate Group	06/07/04
2241-V0*	Ammonia Plant Cogeneration Unit	07/30/99
2247-V0	Sulfuric Acid Plant	03/14/06
2276-V0	Phosphoric Acid Plant	03/22/06

\* When this permit is signed and issued, this permit will be replaced by 2241-V1 which includes the entire Ammonia group.

The facility submitted timely applications for initial Part 70 permits for other units in the complex, which continues to operate under the state permits listed below.

**PCS Nitrogen Fertilizer LP**  
**PCS Nitrogen Fertilizer LP – Ammonia Group - Geismar Agricultural Nitrogen &  
Phosphate Plant**  
**Geismar, Ascension and Iberville Parish, Louisiana**  
**Agency Interest Number: 3732**

Permit No.	Unit or Source	Date Issued
2241 (M-1)	Ammonia Plant	09/26/94
2809	Ammonia Loading (small source permit)	05/30/02

In addition, PSD Permit PSD-LA-603, 01/27/97 and revised 03/18/04 and PSD Permit PSD-LA-617, 03/09/98 were also issued to the complex.

### **III. PROPOSED PROJECT/PERMIT INFORMATION**

#### **Application**

A permit application and Emission Inventory Questionnaire were submitted by Arcadian Fertilizer, L.P. on October 15, 1996 requesting a Part 70 operating permit. An amended permit application was submitted on February 12, 1998. A permit reconciliation application was submitted on April 19, 2002. A second permit reconciliation application was received on July 19, 2005. Additional information dated December 30, 2005 and February 10, 2006 was also received.

#### **Project**

PCS Nitrogen Fertilizer LP is modifying the Ammonia Group by deleting the Ammonia Plant Co-generation Unit. PCS has permanently shutdown the 24 megawatt electric generator and associated natural gas fired turbine. No other modifications are planned, but PCS is incorporating some previously unpermitted auxiliary equipment as well as miscellaneous authorizations to construct and the other small source and general permits. The changes in emissions are almost totally due to a reconciliation of the emission rates, based upon the most recent stack testing of the production units or updates to AP-42 emission factors. The increase in particulate is almost exclusively due to including emissions from the cooling tower. The nitrogen oxide and carbon monoxide emission increases are addressed in permit PSD-LA-617. The increases in VOC's are from when the Urea Plant is down and the Ammonia Plant Carbon Dioxide Vent has all emissions vented to the atmosphere.

#### **Proposed Permit**

Permit 2241-V1 will be the initial Part 70 operating permit for the Ammonia Group.

**PCS Nitrogen Fertilizer LP**  
**PCS Nitrogen Fertilizer LP – Ammonia Group - Geismar Agricultural Nitrogen &**  
**Phosphate Plant**  
**Geismar, Ascension and Iberville Parish, Louisiana**  
**Agency Interest Number: 3732**

**Permitted Air Emissions**

Estimated changes in permitted emissions for the Ammonia Group's Part 70 operating permit in tons per year are as follows:

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
PM <sub>10</sub>	29.50	142.69	+113.19
SO <sub>2</sub>	3.90	2.52	-1.38
NO <sub>x</sub>	1,280.09	1806.24	+526.15
CO	187.59	393.42	+205.83
VOC	12.41	100.55	+88.14
H <sub>2</sub> SO <sub>4</sub> (Sulfuric Acid)*	Not Reported	0.10	+0.10
Ammonia*	459.02	425.22	-33.80
Chlorine*	Not Reported	2.26	+2.26
Hydrogen Sulfide*	Not Reported	0.03	+0.03
Methanol*	Not Reported	21.23	+21.23
Nitric Acid*	Not Reported	3.12	+3.12

\*LAC 33:III Chapter 51 Class III - Toxic Air Pollutants (TAPs): Note that Methanol is included in the VOC emissions.

Estimated permitted emissions from the Part 70 operating permits in tons per year for the entire complex are as follows:

<u>Pollutant</u>	<u>Facility Totals</u>
PM <sub>10</sub>	387.64
SO <sub>2</sub>	10,162.74
NO <sub>x</sub>	2,886.81
CO	1,414.71
VOC	111.70

#### **IV REGULATORY ANALYSIS**

This permit was reviewed for compliance with 40 CFR 70, the Louisiana Air Quality Regulations and National Emission Standards for Hazardous Air Pollutants (NESHAP). Prevention of Significant Deterioration (PSD) and New Source Performance Standards (NSPS) do not apply.

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51.

**Louisiana Air Quality Regulations and NSPS**

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or Table 2 of the proposed Air

**PCS Nitrogen Fertilizer LP**  
**PCS Nitrogen Fertilizer LP – Ammonia Group - Geismar Agricultural Nitrogen &**  
**Phosphate Plant**  
**Geismar, Ascension and Iberville Parish, Louisiana**  
**Agency Interest Number: 3732**

Permit Briefing Sheet. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit, or explained in Table 2 of the proposed Air Permit Briefing Sheet.

**Prevention of Significant Deterioration Applicability and NonAttainment New Source Review**

The current facility meets the definition of a Major Stationary Source with respect to the Prevention of Significant Deterioration (PSD) regulations. However, the facility changes to the equipment or operation is less than the significant emission increase for each pollutant and therefore PSD and non-attainment new source review are not applicable.

The changes in emissions are almost totally due to a reconciliation of the emission rates, based upon the most recent stack testing of the production units or updates to AP-42 emission factors. The increase in particulate is almost exclusively due to including emissions from the cooling tower. At the time of the previous permit, cooling towers were not considered emitters of particulate. The nitrogen oxide and carbon monoxide emission increases are addressed in permit PSD-LA-617 which was issued in 1998. The changes were included in the revised Title V permit application. The increases in VOCs are from when the Urea Plant is down and the Ammonia Plant Carbon Dioxide Vent has all emissions vented to the atmosphere. This is an alternate operating scenario that was not addressed in the previous State permit, but has always been part of the facilities operations.

**MACT Requirements**

This facility is a major source of toxic air pollutants (TAPs) pursuant to LAC 33:III.Chapter 51. The TAP emissions are Louisiana Class III TAPs and therefore Maximum Achievable Control Technology does not apply.

A review of the current and proposed NESHAP regulations found no regulations that apply to the manufacture of ammonia or urea.

**Streamlined Requirements**

Unit or Plant Site	Program Being Streamlined	Stream Applicability	Overall Most Stringent Program
PCS Nitrogen, LP Ammonia and Urea Process Group	None		

**PCS Nitrogen Fertilizer LP**  
**PCS Nitrogen Fertilizer LP – Ammonia Group - Geismar Agricultural Nitrogen & Phosphate Plant**  
**Geismar, Ascension and Iberville Parish, Louisiana**  
**Agency Interest Number: 3732**

**Air Quality Analysis**

Dispersion Models Used: ISCST3 (Modeling was performed for facility wide emissions.)

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
SO <sub>2</sub>	Annual	13.83 $\mu\text{g}/\text{m}^3$	(80 $\mu\text{g}/\text{m}^3$ )
SO <sub>2</sub>	24-hour avg.	250.72 $\mu\text{g}/\text{m}^3$	(365 $\mu\text{g}/\text{m}^3$ )
SO <sub>2</sub>	3-hour avg.	737.48 $\mu\text{g}/\text{m}^3$	(1300 $\mu\text{g}/\text{m}^3$ )
H <sub>2</sub> SO <sub>4</sub>	8-hour avg.	16.9 $\mu\text{g}/\text{m}^3$	23.80 $\mu\text{g}/\text{m}^3$
PM <sub>10</sub>	24-hour	127.66	(150 $\mu\text{g}/\text{m}^3$ )
PM <sub>10</sub>	Annual	33.04	(50 $\mu\text{g}/\text{m}^3$ )

**General Condition XVII Activities**

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

**Insignificant Activities**

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

**V. PERMIT SHIELD**

A permit shield was not requested.

**VI. PERIODIC MONITORING**

Federal regulation 40 CFR 64 Compliance Assurance Monitoring (CAM) is applicable to this facility. Applicability for each pollutant, requires that the unit be subject to an emission limitation or standard and must use a control device to achieve compliance.

40 CFR 64.5 Deadlines for Submittals allows the facility to submit the Compliance Assurance Monitoring plan at the first renewal of the Part 70 Operating permit. Therefore, the facility does not need to comply with the CAM regulations until the first renewal.

**PCS Nitrogen Fertilizer LP**  
**PCS Nitrogen Fertilizer LP – Ammonia Group - Geismar Agricultural Nitrogen &**  
**Phosphate Plant**  
**Geismar, Ascension and Iberville Parish, Louisiana**  
**Agency Interest Number: 3732**

**VII. GLOSSARY**

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H<sub>2</sub>S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

Nitrogen Oxides (NO<sub>x</sub>) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH<sub>4</sub>), Ethane (C<sub>2</sub>H<sub>6</sub>), Carbon Disulfide (CS<sub>2</sub>)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit:  $\geq 10$  tons per year of any toxic air pollutant;  $\geq 25$  tons of total toxic air pollutants; and  $\geq 100$  tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM<sub>10</sub> – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

**PCS Nitrogen Fertilizer LP**  
**PCS Nitrogen Fertilizer LP – Ammonia Group - Geismar Agricultural Nitrogen &**  
**Phosphate Plant**  
**Geismar, Ascension and Iberville Parish, Louisiana**  
**Agency Interest Number: 3732**

Sulfur Dioxide (SO<sub>2</sub>) – An oxide of sulfur.

Sulfuric Acid (H<sub>2</sub>SO<sub>4</sub>) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.